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<120> Recombinant bacterial strains for the production of natural nucleosides and modified analogues thereof

<130> 99DC26E

<140> PCT/EP99/10416

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<150> MI98A002792

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<170> PatentIn Ver. 2.1

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: udp and deoD
cloned in pUC18 so to create a fusion between the
two proteins bonded to each other via an aa linker

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<220>
<223> Description of Artificial Sequence: cloning vector
derived from pUC18

<400> 11
ggcccaata cgcaaaccgc ctctccccgc gcgttggccg attcattaaat gcagaattcg 60
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ctcagtagcaa tctgctctga tgccgcatacg ttaagccagc cccgacacccc gccaacaccc 180
gctgacgcgc cctgacgggc ttgtctgctc ccggcatccg cttacagaca agctgtgacc 240
gtctccggga gctgcattgtg tcagaggttt tcaccgtcat caccgaaacg cgcgagacga 300
aaggccctcg tgatacgcct attttatacg ttaatgtca tgataataat ggtttcttag 360
acgtcaggtagcactttcg gggaaatgtg cgccggacccc ctatttgcctt attttctaa 420
atacattcaa atatgtatcc gctcatgaga caataaccct gataaatgct tcaataataat 480
tgaaaaagga agagttatgag tattcaacat ttccgtgtcg cccttattcc ctttttgcg 540
gcattttgcc ttccctgttt tgctcacccaa gaaacgctgg tgaaagtaaa agatgtgaa 600

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gatcagttgg gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt 660
gagagtttc gccccgaaga acgtttcca atgatgagca cttttaaagt tctgctatgt 720
ggcgccgtat tatccgtat tgacgcccgg caagagcaac tcggcgccg catacaactat 780
tctcagaatg acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg 840
acagtaagag aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta 900
cttctgacaa cgatcggagg accgaaggag ctaaccgctt tttgcacaa catggggat 960
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gctgagatag gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat 1380
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acacagccca gcttgjagcg aacgacccatc accgaactga gatacctaca gcgtgagcta 1920
tgagaaagcg ccacgcttcc cgaagggaga aaggcggaca ggtatccgggt aagcggcagg 1980
gtcgaaacag gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt 2040

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cctgtcggtt ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcagggggg 2100
cgagacctat ggaaaaacgc cagcaacgcg gccttttac ggttcctggc ctttgctgg 2160
cctttgctc acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc 2220
gccttgagt gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg 2280
agcgaggaag cggaaga 2297

<210> 12
<211> 3031
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: udp and decD
cloned into pGM746 without upstream ptac promoter

<400> 12
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agtcggtaac ccggggatcc tagcaggagg gaattcttcc atggctaccc cacacattaa 120
tgcagaaatg ggcgatttcg ctgacgtagt tttgatgcca ggcgacccgc tgcgtgcgaa 180
gtatattgct gaaactttcc ttgaagatgc ccgtgaagtg aacaacgttc gcggtatgct 240
gggcttcacc ggtacttaca aaggccgcaa aatttccgta atgggtcacg gtatgggtat 300
cccgctcgtc tccatctaca ccaaagaact gatcaccgat ttcggcgtga agaaaattat 360
ccgcgtgggt tcctgtggcg cagttctgcc gcacgtaaaa ctgcgcgacg tcgttatcg 420
tatgggtgcc tgcaccgatt ccaaagttaa ccgcacccgt tttaaagacc atgactttgc 480
cgctatcgct gacttcgaca tggtgctaa cgcaatcgat gcagctaaag cactgggtat 540
tgcgtcgat gtggtaacc tggtccgc tgacctgttc tactctccgg acggcgaaat 600
gttcgacgtg atggaaaaat acggcattct cggcgtggaa atggaagcgg ctggatcta 660
ccgcgtcgct gcagaatttg ggcgaaagc cctgaccatc tgcaccgtat ctgaccacat 720
ccgcactcac gagcagacca ctgcccgtga gcgtcagact accttcaacg acatgatcaa 780

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aatcgcactg gaatccgttc tgctggcga taaagagtaa gtcgacctgc aggcata 840
gcttatggtg cactctcagt acaatctgct ctgatgccgc atagttaa gc cagccccgac 900
acccgccaac acccgctgac gcgccctgac gggcttgc tctccggca tccgcttaca 960
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gcgcataca ctattctcag aatgacttgg ttgagtactc accagtcaca gaaaagcatc 1560
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taccaaacga cgagcgtgac accacgatgc ctgttagcaat ggcaacaacg ttgcgc当地 1800
tattaactgg cgaactactt actctagctt cccggcaaca attaatacgt tggatggagg 1860
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aagtttactc atatataactt tagattgatt taaaacttca ttttaattt aaaaggatct 2160
aggtaagat ctttttgc gatctcatgaa cccaaatccc ttaacgtgag tttcgcttcc 2220

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actgagcgctc agaccccgta gaaaagatca aaggatcttc ttgagatcct tttttctgc 2280
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gcagcgtc agtgagcgaq gaagcggaaag a 3031

<210> 13
<211> 3128
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: deoD cloned
downstream ptac promoter

<400> 13
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agctccgaca tcataaagggt tctggcaaatttctgaaat gagctgttga caattaaatca 120
tcggctgtta taatgtgtgg aattgtgagc ggataacaat ttcacacagg aggatcctag 180
caggagggaa ttcttccatg gctacccac acattaaatgc agaaatgggc gatttcgctg 240

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acgtagttt gatgccaggc gaccgcgtgc gtgcgaagta tattgctgaa acttccttg 300
aagatgcccg tgaagtgaac aacgttcgctg gtatgctggg ctccaccggc acttacaaag 360
gccgcaaaat ttccgtaatg ggtcacggta tgggtatccc gtcctgctcc atctacacca 420
aagaactgat caccgatttc ggcgtgaaga aaattatccg cgtgggttcc tgtggcgcag 480
ttctgcccga cgtaaaactg cgcgacgtcg ttatcggtat gggtgcctgc accgattcca 540
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tgcgtAACgc agtagatgca gctaaagcac tgggtattga tgctcgctg ggttaacctgt 660
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aagagtatga gtattcaaca tttccgtgtc gcccatttattc ctttttttgc ggcattttgc 1380
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gacttggttt agtactcacc agtcacagaa aagcatctta cggatggcat gacagtaaga 1680

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cacatgttct ttcctgcgtt atcccctgat tctgtggata accgtattac cgcctttgag 3060
ttagctgata ccgctcgccg cagccgaacg accgagcgcgac gctgactcgt gaggagggaa 3120

gcggaaga

<210> 14
<211> 3934
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: udp and deoD
cloned downstream ptac promoter

<400> 14
gcgccaata cgcaaaccgc ctctccccgc gcgttggccg attcattaaat gcagaattcg 60
agctccgaca tcataacggt tctggcaaatttctgaaat gagctgttga caattaaatca 120
tcggctcgta taatgtgtgg aattgtgagc ggataacaat ttcacacagg aggatcctag 180
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gccgcaaaat ttccgtaatg ggtcacggta tgggtatccc gtcctgctcc atctacacca 420
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aagttAACCG catccgtttt aaagaccatg actttGCCGc tatcgctgac ttcgacatgg 600
tgcgtAACGC agtagatgca gctaaAGCac tgggtattga tgctcgctg ggtAACCTGT 660
tctccgctga cctgttctac tctccggacg gcaaattgtt cgacgtgatg gaaaaatacg 720
gcattctcg ggtggaaatg gaagccggctg gtatctacgg cgtcgctgca gaatttggcg 780
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ccgctgagcg tcagactacc ttcaacgaca tgcataaaat cgcactggaa tccgttctgc 900
tgggcgataa agagtaagtc gacacaggaa acagctatga ccatgattac gaattcgagc 960
tgggtaccat ccatgtccaa gtctgatgtt tttcatctcg gcctcactaa aaacgattta 1020

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gtcgccgcattt acactattct cagaatgact tgggttagta ctcaccagtc acagaaaagc 2460

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atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc atgagtgata 2520
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tgcacaacat gggggatcat gtaactcgcc ttgatcggtt ggaaccggag ctgaatgaag 2640
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tccactgagc gtcagacccc gtagaaaaaga tcaaaggjatc ttcttgagat ccttttttc 3180
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caaatactgt cttcttagtg tagccgtagt taggccacca cttcaagaac tctgttagcac 3360
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cctggtatct ttatagtcct gtcgggttc gccacctctg acttgagcgt cgattttgt 3720
gatgctcgtc agggggggcgg agccatgga aaaacgccag caacgcggcc ttttacggt 3780
tcctggcctt ttgctggcct tttgctcaca tggctttcc tgcgttatcc cctgattctg 3840
tggataaccg tattaccgcc tttgagtgag ctgataaccgc tgcggcgcagc cgaacgaccg 3900

agcgcagcga gtcagtgagc gaggaagcgg aaga

<210> 15
<211> 6046
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: udp and deoD
cloned downstream ptac promoter

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agctccgaca tcataacggc tctggcaaatttctgaaat gagctgttga caattaaatca 120
tcggctcgta taatgtgtgg aattgtgagc ggataacaat ttcacacagg aggatcctag 180
caggaggaa ttcttccatg gctacccac acattaaatgc agaaatggc gatttcgctg 240
acgtagttt gatgccaggc gacccgctgc gtgcgaagta tattgctgaa acttccttg 300
aagatgcccq tgaagtgaac aacgttcgqg gtatgctggg cttcaccggc acttacaaag 360
qccgcaaaat ttccgtaatg ggtcacggta tgggtatccc gtcctgctcc atctacacca 420
aagaactgat caccgatttc ggcgtgaaga aaattatccg cgtgggttcc tgtggcgcag 480
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aagttaaccg catccgtttt aaagaccatg actttgccgc tatcgctgac ttcgacatgg 600
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